Chapter 1: Introduction

In order for New Hampshire to address climate change, we must use cleaner energy and we must use energy more efficiently. Among other things, this means that we will need to develop plentiful sources of renewable energy at the same time that we must adapt to the changes in weather and climate that are already underway due to anthropogenic (man-made) emissions of greenhouse gases into the atmosphere. Actions to curb the emission of heat trapping gases will, in almost all instances, have co-benefits, including creating new economic opportunities and jobs, reducing energy costs, and protecting natural resources and man-made infrastructure. New Hampshire's Climate Action Plan focuses on those actions that are expected to achieve the greatest reductions in greenhouse gas emissions while providing the greatest net medium- to long-term economic benefits. This Plan follows a "no-regrets" approach based on the principle that what's good for the environment will also be good for the economy. The recommended actions in this plan will:

- Promote growth of new jobs in energy services, the building trades and renewable energy development.
- Reduce the cost of energy to our citizens, businesses and government.
- Encourage the growth of our communities in ways that strengthen neighborhoods and urban centers, preserve rural areas and retain New Hampshire's quality of life.

Changes are already occurring to New England's climate, including warmer winters, reduced snowfall and snow-on-ground days, increased rainfall, rising sea level, and more severe weather events that result in increased risk of flooding[1]. These changes are projected to grow in severity and could include other impacts such as a decrease in the abundance of sugar maples, stresses on our fisheries, more widespread occurrence of insect-borne diseases, and an increase in heat-related illnesses[2]. Although the extent and timing of these potential impacts is uncertain, the costs of inaction could be large. *The Stern Review* found that failure to take actions to avoid the worst effects of climate change could depress global gross

domestic product (GDP) by as much as 20 percent below what it otherwise might have been[3*]. On the other hand, avoiding the most severe impacts of climate change would require the investment of just 1 percent of global GDP per year[4].

As a small state, New Hampshire is responsible for only a minor fraction of emissions contributing to global climate change. However, the actions identified in this plan will enable New Hampshire to continue to do its part to reduce emissions of greenhouse gases and prepare for a changing climate, especially when these actions are aggregated with the actions of its neighbors in the New England[5]. These actions, in turn, will benefit the economy, increase state and regional energy security, and improve environmental quality. Taking action now in the areas of energy efficiency, renewable energy, and more efficient transportation will provide New Hampshire with a competitive advantage as energy resources become even more costly in the future.

CLIMATE CHANGE SCIENCE

The presence and variability of greenhouse gases in the atmosphere has contributed to changes in the Earth's climate throughout its geologic history and helped create an environment conducive to life. However, levels of CO_2 and other so-called greenhouse gases in the atmosphere are accumulating at rates greater than can be attributed to natural processes. Consider that, for hundreds of thousands of years, atmospheric CO_2 levels varied between 180 and 280 parts per million (ppm). Since the Industrial Revolution (a period of roughly 200 years), the atmospheric CO_2 concentration has risen steadily above this range to more than 380 ppm and continues to rise today. There is an extensive body of evidence published in the peer-reviewed scientific literature that has concluded that a significant portion of the emissions that have contributed to this rise in the atmospheric CO_2 concentration originates from the burning of fossil fuels; and this excess CO_2 appears to be causing air and ocean temperatures to rise. An extensive analysis review of peer-reviewed scientific literature by the Intergovernmental Panel on Climate Change (IPCC) has clearly shown that if global greenhouse gas emissions continue to grow at current rates, there will be significant and far reaching changes in our future climate that will profoundly affect our health, economy, security, and quality of life[6].

During the public listening sessions held regarding the development of this action plan, four members of the public questioned the interpretation of climate science as presented above, especially the conclusions that average global temperatures were increasing and that increased temperatures were caused by the increase in CO_2 concentrations. The Task Force relied on the peer-reviewed scientific literature, especially the work conducted by the IPCC and other more regionally focused assessments of climate change published in the peer-reviewed scientific literature (e.g., Wake *et al.*, 2008). Appendix 1 provides a list of all of IPCC reports and assessments. Appendix 1 also provides a set of short reports from the IPCC that answer frequently asked questions regarding climate change science. These questions were selected to address some of the more common issues and questions that were raised at Task Force meetings and public listening sessions over the course of 2008.

The scientific literature makes it clear that we must address climate change now because of the potentially catastrophic impacts that may occur if we delay action or fail to act. In addition, the actions that are necessary to combat climate change also achieve environmental, economic, and societal benefits that are worthwhile and important on their own. In fact, most of the recommendations of the Task Force are grounded in this type of "no regrets" policy.

COST OF INACTION

A failure to act to address climate change within New Hampshire and globally is expected to result in increased impacts and costs to New Hampshire. The state was hard hit by 100-year flood events in 2005, 2006, and 2007. These floods caused major damage in several communities and resulted in the loss of life, as well as an enormous cost to affected citizens, municipalities and the state's highway system†. Flooding over this period caused an estimated $130 million in property damage across the Northeast[7]. Although short-term weather events cannot be directly attributed to climate change, scientists anticipate that the incidence and frequency of severe weather events such as these, as well as the recent 2008 ice

* The Stern Review is a 700-page report released on October 30, 2006 by economist Lord Stern of Brentford for the British government which discusses the effect of climate change and global warming on the world economy.

† NHDOT reports state highway repairs from recent flooding disasters of $28.1 million (Oct. 2005), $5.3 million (May 2006), $7 million (April 2007), $2.5 million - including $1 million for railway repairs (Aug. 2008) (Source: DES staff phone call with Bill Boynton, NHDOT – November 7, 2008).

storm, will increase with rising global temperatures. Failure to reduce CO_2 emissions will lead to climate change that will result in more severe weather events and the costs related to emergency response, storm clean-up, and reduced productivity and economic activity will be significant.

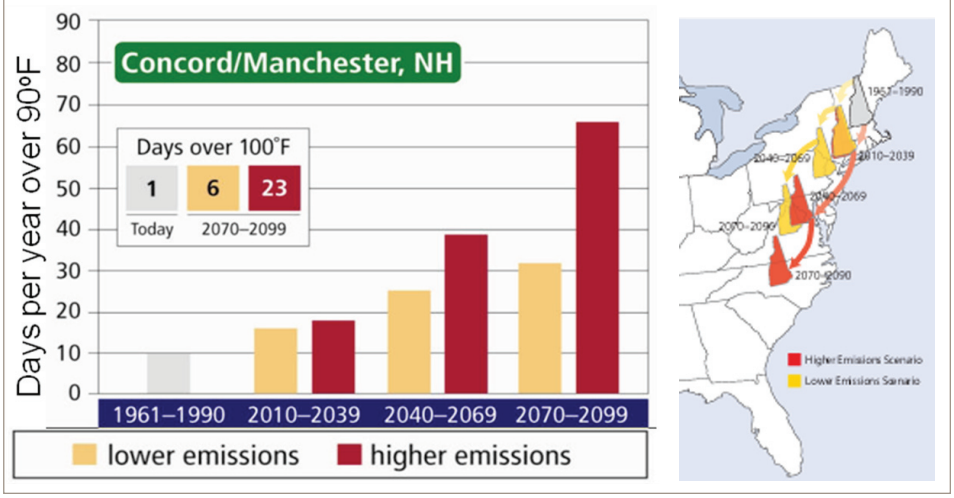
The *Northeast Climate Impacts Assessment* (NECIA)[8], a recent analysis by more than 50 independent climate, ecosystem, and health scientists and economists, examines the potential impacts that may result from the unchecked rise in greenhouse gas emissions and states that:

> *"If global warming emissions continue to grow unabated, New Hampshire can expect dramatic changes in climate over the course of this century, with substantial impacts on vital aspects of the state's economy and character."*

On a regional scale, the 2007 Northeast Climate Impacts Assessment (NECIA)[9] concludes that if greenhouse gas emissions continue to increase at current rates, by late in this century New Hampshire's climate will more closely resemble that of North Carolina (Figure 1.1).

Such a change in New Hampshire's climate presents numerous potential economic impacts:

Figure 1.1 - Temperature Effects of a Warming Climate



- Reduced viability of New Hampshire ski areas (a $650 million annual industry in New Hampshire) and other winter-based recreational industries; the snowmobiling economy ($3 billion annually in the Northeast region) almost eliminated in the southern areas and reduced to fewer than 20 days per year in the northern part of the state.
- Increased frequency and severity of heavy, damaging rainfall events and the associated major economic impacts of cleanup, repair, and lost productivity and economic activity.
- Increased frequency of short-term (one to three month) summer droughts from every two to three years to annually, resulting in increased water costs, and impacting New Hampshire's agricultural and forestry industries.
- Increased coastal flooding, erosion, and private property and public infrastructure damage from the estimated rise in sea level.
- Increased human health impacts and costs due to extreme heat (more than 20 days per year projected over 100°F), increased air pollution, and prevalence of vector borne diseases.
- Change in forest species and extinctions.

Such large-scale changes to our climate have the potential to affect human health, well being, and the economy over the short- and long-term. Economic effects could include impacts to New Hampshire's forestry and tourism industries as well as lead to greater infrastructure costs for cities and towns and state government. Higher summertime temperatures would exacerbate air pollution and create health concerns for all citizens, especially children, the elderly, and those with respiratory ailments.

Given the dependence of the state's economy on tourism and the natural environment, impacts to the state's ecosystems and landscapes are of particular concern and have implications for the New Hampshire way of life. Already the ski and snowmobile industries have been affected by warming winters[10,11,12] and there are implications for the logging industry and coastal beaches as well. Commercial logging occurs most efficiently in the winter when the ground is frozen. Warmer winter temperatures affect the number of days and, hence income, for logging activities. Coastal beaches can be affected by warmer and shorter winters with increased bacterial counts, changes in fisheries, and increased outbreaks of nuisance species such as red tide.

A May 2008 report, *The Cost of Climate Change*[13], based on

new research relying on historical impact data to project future economic impacts, projects that total global warming economic cost in the United States (under the "business as usual" emissions growth scenario) could equal 3.6 percent of gross domestic product (GDP). Impacts from hurricane damage, real estate losses, and energy and water costs will account for about half of these costs, or $1.9 trillion annually by 2100.

In addition to taking steps to reduce CO_2 emissions, New Hampshire must also invest in adaptation to better prepare for and reduce the risks of changing local conditions with climate change – as discussed in detail in Chapter 3. Even if emissions were significantly decreased immediately, New Hampshire's climate patterns are expected to continue to change over time as a result of delays in response by the global climate system. The enormous costs to the state of the three recent major floods (over an eighteen month period) as well as the recent ice storm, are exemplary of the types of costs we may face by failing to adapt to changes in climate through actions such as improved emergency management, and infrastructure improvements to increase resistance and resiliency.

REDUCTION GOALS

New Hampshire has worked cooperatively to develop a regional climate change action plan under the auspices of the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP). The 2001 NEG/ECP Climate Change Action Plan calls for a long-term goal that reduces regional greenhouse gas emissions "*sufficiently to eliminate any dangerous threat to the climate: current science suggests this will require reductions of 75-85 percent below current levels.*" In a 2007 resolution, the NEG/ECP established a target date of 2050 to achieve "*a 75-85 percent worldwide target reduction in emissions, subject to further scientific analysis of this target.*"[14]

The goal of reducing greenhouse gases 80 percent below 1990 levels by 2050 has been adopted by numerous states, cities, and organizations[15]. The 2007 IPCC report (Appendix 1) indicated that this goal was necessary to stabilize greenhouse gases in the atmosphere at or below 450 ppm CO_2 – a level that would avoid the most severe and dangerous impacts of climate change. However, recent research suggests that even more aggressive emission reductions are required to stabilize our climate system[16].

Clearly, stabilizing the concentrations of greenhouse gases in the atmosphere will only occur through global action. Even regionally, the NEG/ECP Climate Change Action Plan recognized that different jurisdictions would have varying degrees of success at meeting even the short-term goals of that plan. However, the long-term goal of reducing greenhouse gas emissions 80 percent by 2050 is the benchmark being used by many states and environmental organizations to assess whether climate action plans are putting into place the policies, market changes, technologies, and regulations needed to adequately address the causes of climate change[17]. Accordingly, the Task Force recommends that New Hampshire strive to achieve a long-term reduction of 80 percent below 1990 levels, consistent with the NEG/ECP resolutions and the consensus recommendations of the scientific community.

In the more immediate future, a mid-term goal should be consistent with specific actions that New Hampshire can take in the context of its energy profile, environmental priorities and resources, and economic circumstances. At the request of the Climate Change Policy Task Force, UNH-based Carbon Solutions New England (CSNE) conducted a detailed and comprehensive evaluation of all the potential actions New Hampshire could take to reduce its greenhouse gas emissions and move towards the long-term goal of reducing its emissions 80 percent below 1990 levels by 2050. The major result of this undertaking is a set of recommended actions (described in Chapter 5) based on the projected greenhouse gas emission reductions and economic effects that would result from these actions. Consistent with the specific action recommendations in the action plan, the Task Force recommends that New Hampshire strive to achieve mid-term emission reductions of 20 percent below 1990 levels by 2025.

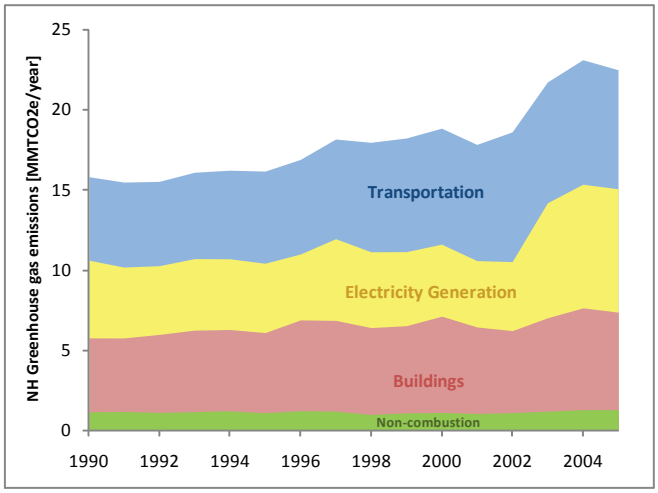
NEW HAMPSHIRE'S GREENHOUSE GAS INVENTORY

To understand New Hampshire's contribution to climate change and be better positioned to identify and select recommended actions, a greenhouse gas emission inventory was conducted for 1990-2005 using the EPA's State Inventory Tool[‡].

The inventory revealed that the vast majority of New Hampshire's greenhouse gas emissions are in the form of CO_2 resulting primarily from the combustion of fossil fuels for heat, power, and transportation. Analysis of this inventory showed that electric generation, transportation, and direct fuel use in buildings each contributed roughly one-third of the state's

[‡] The EPA's State Inventory Tool (SIT) is intended to assist with the development of a state-level greenhouse gas emission inventory. It uses interactive spreadsheet software that gives users the option

Figure 1.2 Historical Emissions by Sector



total emissions in 1990. As seen in Figure 1.2, greenhouse gas emissions from each of these sectors have steadily increased in a roughly linear fashion. Between 1990 and 2005, the state's total greenhouse gas emissions increased by 48 percent from 15.79 million metric tons of CO_2 equivalents ($MMTCO_2e$) to 22.45 $MMTCO_2e$ in 2005[§] (Table 1.1).

The emissions from the transportation sector increased rapidly from 1990 to 2005 and are presently the greatest single contributor to the state's total greenhouse gas emissions – approximately 33 percent of the total. This was principally due to an increase in fuel use as gasoline consumption in New Hampshire rose by 42 percent from 489 million gallons per year in 1990 to 695 million gallons in 2005, and diesel consumption rose by 105 percent from 52 million gallons per year to 106 million gallons[18].

The emissions originating from the building sector, which includes direct energy consumption in residential, commercial, and industrial space, grew more slowly. Building related emissions grew by nearly 32 percent from 1990 to 2005 and these emissions accounted for 29 percent of New Hampshire's total emissions in 2005. The leading cause of this increase was due to a significant expansion in the use of natural gas which increased from 14 billion cubic feet in 1990 to 25 billion cubic feet in 2005[19].

The electric generation sector experienced significant growth as well, but was punctuated by sharper increases than the building and transportation sectors. The greatest single increase in emissions occurred between 2002 and 2003, when New Hampshire's two newest natural gas powered electrical generation plants, Granite Ridge Energy LLC (Londonderry, NH) and NAEA Newington Energy LLC (Newington, NH), came online. The emissions from these two plants represent nearly 31 percent of the total increase in New Hampshire's emissions from 1990 to 2005. These two facilities also account for approximately 64 percent of the total growth in the electric generation sector over that time, bringing electric generation's emission contribution to 34 percent of the state's total. The emissions increase caused by these two facilities was not linked to a rise in energy consumption by New Hampshire residents. Instead, the vast majority of this new generation was exported to other New England states as the exported portion of New Hampshire's generation rose from 35 percent in 2002 to 54 percent in 2004[20].

Table 1.1 - Table of Historical Emissions by Sector

	Emissions [$MMTCO_2e$/yr]			
	1990	**1995**	**2000**	**2005**
Total Energy Related Emissions	**14.68**	**15.08**	**17.74**	**21.21**
Commercial	1.32	1.15	1.44	1.93
Industrial	0.83	1.09	1.64	0.98
Residential	2.47	2.76	2.93	3.17
Transportation	5.21	5.76	7.24	7.43
Electric Power	4.85	4.32	4.49	7.7
Total Non-Combustion Related Emissions	**1.1**	**1.05**	**1.07**	**1.24**
CH_4 and N_2O emissions	1	0.83	0.65	0.69
Industrial Emissions	0.1	0.22	0.42	0.55
PFC, HFC, and SF_6				
Total Emissions	**15.79**	**16.13**	**18.81**	**22.45**

Non-combustion emissions contribute a smaller but significant source of greenhouse gases to the atmosphere. The agriculture, forestry, and waste sectors together contributed 2.3 percent of the state's emissions in 2005 following a 35 percent decline in direct emissions since 1990. This decline was principally due to reductions in methane gas emissions from landfills due to flaring and landfill gas energy projects. The transportation sector provided a small amount of methane

of applying their own state-specific numbers or using default data pre-loaded for each state. The default data is gathered by federal agencies and other sources covering fossil fuel use, agriculture, forestry, waste management and industry. The SIT provides a streamlined way to update an existing inventory or complete a new inventory. The software is accompanied by updated guidance describing best practices.

[§] EPA State Inventory Tool output using default values for state emissions.

and nitrous oxide emissions over this time as well. Industrial process gases also increased steadily from 1990 to 2005, and contributed nearly 2.5 percent of the states greenhouse gas emissions in 2005, up from 0.65 percent in 1990. If growth in industrial emissions continues to expand at its current rate, this will become an increasingly important source of greenhouse gas emissions.

A significant source of emissions not addressed in the EPA inventory was the conversion of agricultural and forested lands to other uses. This conversion, resulting from development associated with New Hampshire's rapid rate of population growth, provided a steady contribution of greenhouse gas emissions. These emissions resulted from the direct release of large amounts of carbon that had been stored in agricultural and forest soils and trees, which form a natural carbon sink. This development not only releases CO_2, but it also reduces the ability of New Hampshire's forest and agricultural lands to absorb more CO_2 in the future.

Though population growth has slowed since approximately 2000, New Hampshire had been the fastest growing state in New England over the past 40 years and even in recent years the influx of new residents and other development pressures have resulted in forest lands and agricultural lands being cleared for residential, commercial, and industrial development. This land use conversion has caused the release of an additional 0.35 $MMTCO_2e$ per year, driven largely be the complete clearing of 5000 acres of forest land each year**. A significant factor not addressed by these figures is the permanent loss of the sequestration potential of these natural lands as the capacity to store carbon naturally in the soil and forests is lost.

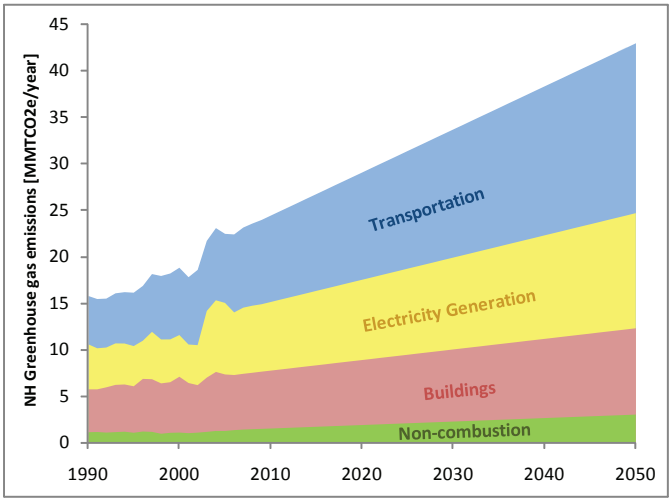
PROJECTED GREENHOUSE GAS EMISSIONS

Projections of future greenhouse gas emissions prepared by Carbon Solutions New England (CSNE) indicate that if current trends prevail under "business-as-usual" (BAU) conditions, New Hampshire's emissions will grow at a rate equal to approximately 2 percent of *current* emissions per year, roughly doubling the current emission levels by 2050 (Figure 1.3; Table 1.2).

The business-as-usual projections of New Hampshire greenhouse gas emissions due to fossil fuel use for each sector were developed by extrapolating historical emissions data out to 2050. Linear extrapolations of 1990-2005 emissions data were used to project emissions in the transportation, residential, commercial, and industrial sectors[21]. Emissions from the electricity generation sector were calculated differently because the historical New Hampshire emissions record is punctuated by large fluctuations due to the expansion and retirement of major generation plants. Linear extrapolation of future New Hampshire generation was projected based on the assumption that New Hampshire will continue to contribute 17.3 percent of New England generation. Projected emissions were calculated based on the assumption that all future expansion of New Hampshire generation capacity is provided by natural gas plants.

The transportation sector is anticipated to be the largest single contributor to the growth in New Hampshire's greenhouse gas emission as a consequence of population increase and sprawl-type development patterns. These two factors would lead to more cars on the road, each traveling a greater number of miles and collectively resulting in an annual fuel consumption increase equal to 2.8 percent of 2008 levels. By 2012, it is projected that New Hampshire would consume 719 million gallons of gas per year and 124 million gallons of diesel. By 2025, consumption would rise to 798 million gallons of gas per year and 166 million gallons of diesel[22]. This would contribute to a 30 percent increase in transportation emissions between 2012 and 2025. Such growth in transportation would result in this sector generating 40 percent of all greenhouse gas emissions by 2025.

Figure 1.3 Future Projected Emissions by Sector (Business as Usual)



The second largest contributing factor is the expected

** Based on CSNE analysis (Appendices 6 and 7).

Table 1.2 – New Hampshire Projected Greenhouse Gas Emissions (Business as Usual)

	Emissions [$MMTCO_2e/yr$]		
	2012	2025	2050
Total Energy Related Emissions	**23.76**	**29.30**	**39.95**
Commercial	1.47	1.64	1.98
Industrial	1.53	1.81	2.34
Residential	3.38	3.92	4.96
Transportation	9.74	12.66	18.27
Electric Power	7.63	9.26	12.39
Total Non-Combustion Related Emissions	**1.58**	**2.07**	**3.00**
CH_4 and N_2O emissions	0.73	0.75	0.79
Industrial Emissions PFC, HFC, and SF_6	0.84	1.31	2.21
Total Emissions	**25.34**	**31.36**	**42.95**

annual load growth in the electricity sector equal to an annual increase of nearly 1.5 percent of 2008 levels with energy generation rising from 12.6 million MWh in 2012 to 14 million MWh in 2025. The increase in electric load would result from an increase in population within the state and region. As noted above, New Hampshire is a net exporter of electricity with nearly 50 percent of its total generation currently exported out of state[††]. The increase in total generation will also result from an increase in the per capita energy consumption. Under a BAU scenario, this additional load is projected to be met largely by new natural gas-fired generation facilities and would result in a 21 percent increase in electric power emissions between 2012 and 2025. This slower growth relative to the transportation sector discussed above will result in the electric generation sector responsible for producing approximately 30 percent of all greenhouse gas emissions by 2025[‡‡].

Direct emissions from buildings (i.e., residential, commercial and industrial sources) is expected to grow more slowly, with non-electric energy use in the residential, commercial and industrial sectors expected to grow by only 9 percent between 2012 and 2025. This much slower growth relative to other sectors in New Hampshire will reduce the relative contribution of buildings' direct emissions to 25 percent by 2025[23].

Understanding these trends provided the Task Force with the opportunity to identify those actions with the potential to lead to significant emission reductions while avoiding energy use and the associated costs.

TASK FORCE PROCESS

Governor Lynch established the Climate Change Policy Task Force through Executive Order 2007-3 on December 6, 2007 (Appendix 2). The Governor charged the Task Force with developing greenhouse gas reduction goals and recommending specific regulatory, voluntary, and policy actions that the state should consider to meet these goals. The Task Force consisted of 29 members (Appendix 2), representing a broad range of sectors and interests in New Hampshire including:

- The New Hampshire House and Senate
- New Hampshire state agencies
- Municipal government
- Business and industry
- Environmental interests
- The forestry sector
- Science/academia
- Public utilities
- The insurance industry

In support of the Task Force, six working groups were formed to develop a suite of possible strategies for greenhouse gas reductions and to summarize the results in the form of individual action reports. The six working groups were:

- Residential, Commercial and Industrial (RCI)
- Electric Generation (EGU)
- Transportation and Land Use (TLU)
- Agriculture, Forestry and Waste (AFW)
- Government, Leadership and Action (GLA)
- Adaptation (ADP)

Over 125 individuals, representing a wide range of interests and expertise, participated in these working groups (Appendix 2). The working groups initially received a list of nearly 220 actions that had been considered in the climate action plans of other states. The groups reviewed these potential actions, developed additional or modified emission reduction strategies, and identified the most promising actions before analyzing their respective impacts and prioritizing the potential actions.

Each reduction strategy, called a potential action report

[††] Analysis of state energy data supplied by EIA. Energy Information Administration website (2009), NH Energy Consumption 1960-2006. http://www.eia.doe.gov/emeu/states/state.html?q_state_a=nh&q_state=NEW%20HAMPSHIRE (last accessed January 14, 2009).

[‡‡] EPA State Inventory Tool output using default values for state emissions.

(complete set in Appendices 4 and 5), was submitted to the Task Force's technical consultants, CSNE, for analysis. CSNE evaluated each of the 80-plus potential action reports developed by four of the six working groups[§§] to determine the potential CO_2 emission reductions, costs of implementation, and cost savings associated with each potential action (Appendices 6 and 7). CSNE conducted its analyses through an iterative process over a period of seven months to ensure that the reductions, costs, and savings projections for each analyzed potential action were based on grounded assumptions and reflected the collective wisdom of the working groups. CSNE routinely consulted the working groups to discuss the methodology and assumptions used in the analyses. When necessary, experts outside of this process were consulted in a similar fashion. CSNE's analyses were presented to the Task Force on two occasions in order to solicit feedback from the Task Force. All of the assumptions used in the analyses are detailed in the Approach and Assumption documents which appear in Appendix 7.

The Adaptation working group was formed to consider the current and projected impacts of climate change and to identify potential actions that should be taken to help society adapt to climate change. While not typically included in the climate action plans of other states, the Task Force believed that adaptation was a critical issue to address because the state is already experiencing the impacts of a changing climate, and these changes are projected to become more pronounced. The scale of the global climate system is such that there is a lag in the climate's response to increasing atmospheric CO_2 concentrations. This delayed response means that the full effect of today's emissions will not be realized until decades into the future. At the same time, the full benefit of any emission *reductions* will not be realized for years to come. Because CO_2 emissions remain in the atmosphere for an average of 100 years, we will continue to experience climate change impacts even if anthropogenic greenhouse gas emissions were significantly reduced immediately. Consequently, the Adaptation working group looked at what actions should be considered to prepare New Hampshire for a changing climate even as the state begins to reduce its greenhouse gas emissions.

[§§] The potential action reports for Government Leadership and Adaptation (GLA) were not analyzed by CSNE. Those potential action reports prepared by the Electric Generation (EGU), Residential, Commercial, and Industrial (RCI), Transportation & Land Use (TLU), and Agriculture, Forestry & Waste (AFW) working groups were analyzed by CSNE for carbon reductions and economic impacts.

The Task Force developed and adopted the following principles as a guide in formulating its action recommendations:

1. **Maximize greenhouse gas emission reductions to move the state, steadily and as quickly as possible, toward the goal of reducing greenhouse gas emissions 80 percent below 1990 levels by 2050.**
2. **Select actions that provide the greatest net economic benefits and economic opportunities to New Hampshire, while also considering energy security, public health, and environmental benefits.**
3. **Make investments using a phased approach that first exploits the most cost-effective, currently available technologies and incorporates more advanced technologies as they become more available and are shown to be cost-effective.**
4. **Ensure that policies (a) do not further disadvantage already disadvantaged populations, and (b) include mechanisms to mitigate adverse impacts to disadvantaged populations.**
5. **Reduce vulnerability from a changing climate by planning and taking adaptive measures to address existing and future impacts to natural resources, the built environment, and New Hampshire's way of life.**
6. **Engage the public to take action at the individual, community, state, and national levels.**
7. **Create a plan that views climate change in a regional, national, and global context, is reviewed on a regular basis to determine progress, and whose actions can evolve and develop over time in response to changing technology, economics, and sociological circumstances.**
8. **Sustain the state's resources, both cultural and natural, that provide opportunities for both mitigation and adaptation.**

PUBLIC INPUT

An extensive public process was conducted to gather input for the plan and allow the public access to the Task Force's work, and to assist the Task Force in understanding the issues and opportunities connected to climate change. On February 19, 2008, an initial public listening session was held to obtain input on the kinds of actions the Task Force should explore. After the working groups completed their draft of potential actions, the 100-plus potential action reports were released for

public comment. Five additional listening sessions were then held at locations across the state to solicit public comments. Two of these sessions were conducted using live interactive video conferencing through the Granite State Distance Learning Network, centered at the Seacoast Science Center in Rye and at the North Country Education Services Center in Gorham. This video conferencing technology enabled five additional locations to participate in the listening sessions. Participants at each video-linked site could interact with all other sites by providing questions and comments to the host site and watching questions and comments in real time from participants at the other linked sites. Video conferencing is just one example of using new technologies to reduce greenhouse gas emissions – in this case, by reducing automobile travel.

The public listening sessions attracted over 175 attendees and yielded more than 75 oral comments. A detailed summary of these comments was provided to the Task Force and is reproduced in Appendix 3. In addition, over 200 letters and emails were received and turned over directly to the Task Force (copies included in Appendix 3). Finally, any subsequent actions or approaches considered by the Task Force after completion of the public listening sessions were also distributed for public review and comment separately.

Four clear themes emerged from among all comments received:

1. The Task Force should recognize the magnitude of the climate change problem and be bold in its decision making.
2. Significant improvements in energy efficiency in every sector – but particularly energy efficiency in buildings – should be a major recommendation and commitment of the state action plan.
3. Transportation issues, including reducing the amount of gasoline and diesel fuel that we use, improving public transportation, and encouraging consumers to select more fuel-efficient cars, are critical to any plan addressing climate change.
4. Comprehensive education is needed to inform the public of actions they can take to reduce energy use, train the energy services trades in new technologies, and develop appropriate curricula for our schools.

The Task Force received many other comments on numerous themes, including promotion of renewable energy resources, development of bike paths, and ensuring that our forests are used sustainably. Five out of 100 who commented questioned the validity of conclusions in the peer-reviewed scientific literature on climate change. However, even these individuals agreed with the recommendations of promoting energy efficiency and increasing the state's use of renewable energy resources for the many benefits they provide.

The Task Force and its working groups also considered a number of related and ongoing initiatives, including:

- Governor Lynch's "25 x '25" initiative to obtain 25 percent of New Hampshire's energy from renewable resources by 2025.
- Governor Lynch's Executive Order 2005-04 to reduce energy use in state operations by 10 percent.
- The State Development Plan, being prepared by the New Hampshire Office of Energy and Planning.
- Efforts of the New England Governors/Eastern Canadian Premiers Climate Change Steering Committee.
- A Thermal Energy Study being prepared by the Office of Energy and Planning as required by legislation establishing an Electric Renewable Portfolio Standard.